A newsletter of the Local Technical Assistance Program (LTAP)

Issue Number 45, Winter 94/95

Bulletin

Lost in the Training Maze?

by Stan Sanders

A young design engineer has just undergone his annual performance review. One of the comments in the review is that he needs to expand his knowledge base into engineering areas other than design. His supervisor has suggested that he take some courses in traffic engineering, value engineering, and perhaps erosion and sediment control.

His supervisor has also suggested that he prepare himself for a supervisory position by getting some management training. He agreed that this exposure was necessary for his career development, but he was at a loss as to how to find such training opportunities. His agency's trainer only provides training on a part-time basis and has been unable to help in guiding him toward the suggested courses.

The agency trainer, however, had an idea about who could help. "What you need is a contact who can give you all of the training information you need in these areas," the trainer said. "As a matter of fact, I just received the name of such a person in the Department of Transportation. He is Stan Sanders of the Northwest Technology Transfer (NWT^2) Center, a division of TransAid, and he can be contacted at 1-800-973-4496. He operates a one-stop training resource center for T^2 and just might be able to assist you."

The call was placed and within a day or two, the engineer received the information he needed to satisfy his training needs. In addition to the information he requested, he was enrolled in an erosion control workshop, placed on the waiting list for the management training he needed, and he received dates and other information on a value engineering seminar scheduled for the following spring. All of this information was received with one phone call.

Most agencies have training needs, but often the people who need training never see the announcements, flyers, or catalogs describing the opportunities available to them. To assist local agency personnel in identifying training opportunities, the NWT^2

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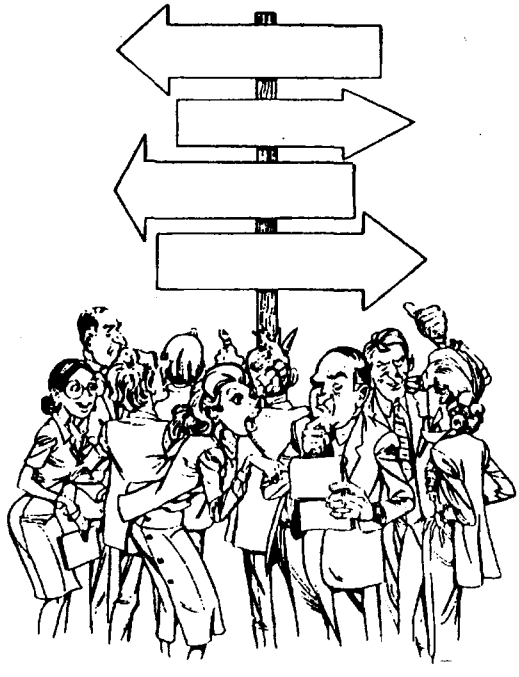

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Center has recruited a training coordinator to provide information and assistance. The coordinator's major objectives are:

1. Assess clients' education/training needs through surveys, interviews, and other means.
2. Locate training opportunities to fill those needs.
3. Contact education/training providers for information about training opportunities in which clients can participate.
4. Provide immediate assistance to clients' inquiries regarding training dates, locations, frequency, and cost.
5. Provide feedback from those who have already attended the provider's training courses.
6. When needed training opportunities do not exist, attempt to create opportunities through training providers, either public or private.

A survey is currently being conducted to determine the training and educational needs of city and county public works personnel. The survey covers a number of topics related to training: type of courses, preferred locations and time of year, length of courses, seminars and workshops, and other information helpful in determining local agency training desires and needs.

This survey is being conducted in cooperation with the Transportation Engineering Education Steering Committee, which provides guidance for local agency training development in the technical, professional and management areas. The Committee consists of members from the Institute of Transportation Engineers, the American Public Works Association, the Consulting Engineers Council of Washington, and representatives from the Washington State Department of Transportation, the Transportation Improvement Board, the Washington Traffic Safety Commission and the Federal Highway Administration. Through this committee and other interested organizations, educational opportunities will be made available to enhance the technical knowledge and career development of agency personnel throughout the transportation arena.

Training opportunity notices are published and distributed through this quarterly Bulletin. Published alternately with this Bulletin and distributed to cities and counties throughout the state, is a quarterly "Flyer" which lists educational opportunities. Special announcements and catalogs are distributed periodically to further advertise training opportunities sponsored by the NWT^2 Center and the Washington State Department of Transportation. An Electronic Bulletin Board System which provides weekly updates of training opportunities is also available. The Bulletin Board can be accessed by dialing (360) 705-6840. This is a 24-hour a day service provided by the NWT^2 Center.

For more information on training opportunities, contact Stan Sanders, T^2 Training Coordinator at 1-800-973-4496 or (360) 705-7477. Office hours are 7:00 a.m. to 4:30 p.m., Monday through Friday.

Broaden Your Skills Through Reading!

A Free Service to Local Agencies by WSDOT's Library

(360) 705-7750

Work Zone Intrusion Alarms — A Better SHRP Idea

By Clay Wilcox

On Monday, November 14, 1994, 20 people braved the cold and rain at the State Patrol Academy in Shelton to observe or participate in a unique demonstration. Participants included representatives from the FHWA Region 10 and Washington State division offices and from Western Federal Lands Highway Division. Four of the Washington State Department of Transportation regions were also represented, as was the Olympia Service Center.

The advance publicity for this event claimed that eight intrusion alarms would be tested and evaluated in a mock work zone set up on the driving course at the Academy. This turned out to be not quite true. One of the alarms was not completed and two experienced total battery failure.

The four that were tested were: (1) a microwave unit, (2) a laser, (3) a pneumatic with hardwire to the alarm, and (4) one with the capability to be switched from infrared to pneumatic by flipping a switch and activating the alarm by radio. A fifth unit is a different concept ... a Talkie Tooter. Anyone who has worked in the logging industry is probably familiar with this device used by the crew in the brush to signal the yarder operator. These "talkie tooters" are time-tested units that have proven their reliability under work conditions.

Alarms that were not tested include a laser unit being built by an electronics technician on the WSDOT Olympic Region signal crew, and two pneumatic units that had the battery problems.

A summary of the tests follows:

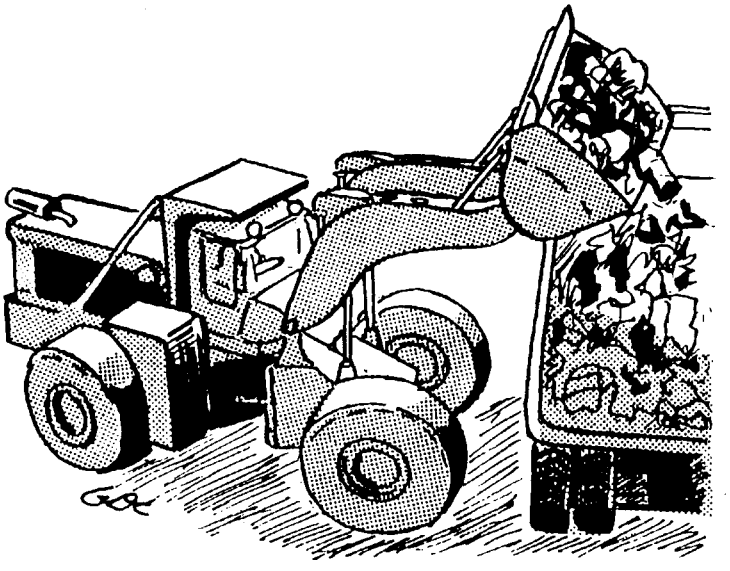
1. The microwave unit would only give an entrance gate of about 80 feet between the transmitter and the receiver. The manufacturer said it should have been able to get 1,000 feet of coverage easily and wants to inspect the unit for possible damage in shipping.
2. The laser unit was difficult to aim and hit the window in the receiver with the laser beam. This device has very good range and will cover a large taper and transition area.
3. The biggest drawback with the pneumatic units is the limited length of hose that can be used with them — about 150 feet maximum. This would not be enough coverage in most cases. These units were very reliable though.
4. The infrared side of the two-way unit has the smallest entrance gate of all the models tested — about 50 feet.
5. The Talkie Tooters were very reliable and had about a half-mile range. Disadvantages are that they will require flaggers so the crew size cannot be reduced, and they are the most expensive unit of all that were tested.

In the spring we will retest the units that had problems and test the one that was not finished, as well as any new ones that come along between now and then.

(Clay Wilcox is a Maintenance Methods Specialist with WSDOT.)

AASHTO Drainage Guidelines Adopted by FHWA

Section 1057 of the ISTEA required FHWA to updated its erosion and sediment control guidelines which were issued in 1974 for federal aid highway construction projects. In response, FHWA has adopted AASHTO's Highway Drainage Guidelines, Volume II, Erosion and Sediment Control in Highway Construction, 1992.



TransAid Replaces Local Programs

With the new reorganization of WSDOT under Secretary Sid Morrison, comes some major changes in the structure of WSDOT. What was once State Aid, then Local Programs, now is TransAid. As one of five service centers, TransAid brings together most of the federal and state transportation grant programs that were previously spread throughout WSDOT. Dennis Ingham, the Assistant Secretary for TransAid, notes that his service center will continue to provide assistance to local agencies.

Federal grants programs including highways and transit will be handled by Kathleen Davis. State grant programs will be handled by Larry Roediger. Technology transfer including training is the responsibility of George Crommes, the T^2 Director. Dan Sunde is the contact for the ISTEA Management Systems, and Roxyne Bentley is the new Administrative Officer.

Part of the restructuring of WSDOT also includes the following:

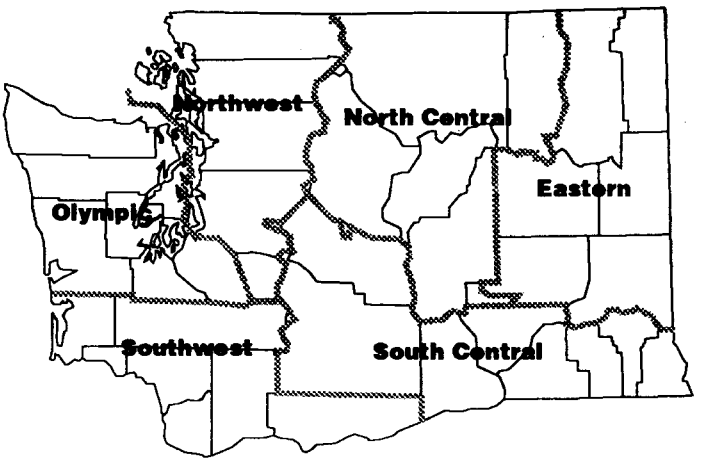
1. Renaming districts to regional names more descriptive of their geographic areas, e.g., District 1 becomes Northwest Region.
2. Formation of modal advocate groups: highways and local roadways, public transportation and rail, aviation, freight mobility and economic partnerships, and Washington State Ferries.
3. Other service centers, besides TransAid include: Planning and Programming, Finance and Administration, Field Operations Support, and Environmental and Engineering.

In order to better serve with the additional responsibilities under the Secretary's reorganization, TransAid has moved from its previous location to the second floor, wing C of the Transportation Building. The Transportation Improvement Board (TIB) staff are also housed there. Phone numbers of TransAid staff have not changed.

Dennis Ingham	(360) 705-7371
Wayne Gruen	(360) 705-7374
George Crommes	(360) 705-7390
Kathleen Davis	(360) 705-7377
Larry Roediger	(360) 705-7917
Roxyne Bentley	(360) 705-7373
Donna Stallings	(360) 705-7372
Dan Sunde	(360) 705-7383
Fax	(360) 705-6822

The new address is:

TransAid Service Center, WSDOT, P.O. Box 47390
Olympia, WA 98504-7390



WSDOT Regional TransAid Engineers

Local agencies requesting assistance, with their federal project should continue to contact their regional TransAid Office (formerly known as the District Local Programs Engineers).

Northwest Region

Terry Paananen (206) 440-4734

North Central Region

Stan Delzer (509) 663-9657 SCAN 565-9657

Olympic Region

Bob Holcomb (360) 357-2666

Southwest Region

Bob Elderkin (360) 905-2215

South Central Region

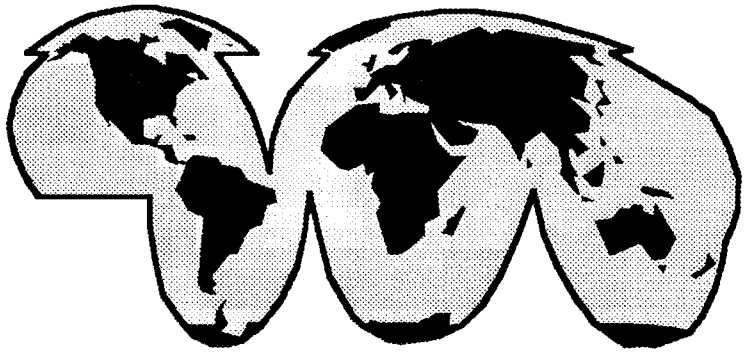
Bill Linse (509) 575-2580 SCAN 558-2580

Eastern Region

Brent Rasmussen (509) 456-3058 SCAN 545-3058

In the Metric World

On behalf of the federal construction agencies, the Construction Metrication Council issued the following press release on September 16, 1994. It was timed to coincide with the publication of a special notice in the Commerce Business Daily announcing the transition of federal construction to metric.



Feds Give Notice on Metric Construction

Federal construction is converting to metric and the construction industry should prepare for the change, according to the leader of the government's construction metrication program.

"On Friday, September 16, we published a Special Notice in the Commerce Business Daily to formally announce the transition," said Thomas R. Rutherford, P.E., chairman of the Construction Subcommittee of the federal Interagency Council on Metric Policy.

The federal government, far and away the largest builder in the world with $40 to $50 billion in construction annually, has made major strides toward its goal of instituting metric in the design of federally funded facilities. Agencies with active metric construction programs include the Army Corps of Engineers; the Naval Facilities Engineering Command; the Air Force; the Federal Highway Administration; the General Services Administration; the National Aeronautics and Space Administration; the Bureau of Prisons; the Public Health Service; the Smithsonian Institution; the National Institute of Standards and Technology; and the Departments of Veterans Affairs, Energy, Interior, State, and Agriculture.

State and local construction tied to federal grant programs is converting as well. By 1997, total government metric work could amount to $50 billion annually and by the year 2000 to as much as $100 billion. "Now the focus is shifting to the private sector," Rutherford noted. "Any firm wishing to participate in federally funded construction work must do so in metric. Providers of architectural and engineering services will be expected to use metric units of measure in their work. Contractors and the trades will need to understand and bid on metric contract documents as well as prepare shop drawings and perform on-site work in metric. Product manufacturers are advised to include metric units in their product literature, catalogs, and advertising and they should design new products in rounded, rational metric sizes."

Rutherford pointed out that studies of completed federal metric projects have shown conversion to be neither difficult nor costly if participants in the process are properly prepared and take a positive approach to metrication. U.S. design, construction, and product suppliers that work or produce internationally routinely use metric.

"If the U.S. construction industry gets behind metric," Rutherford continued, "it can complete the conversion process in the next five to ten years and truly join the global marketplace. And metric usage, by increasing efficiency and improving quality control, will help the industry become a tougher international competitor."

Metric Highway Signs: The Good News

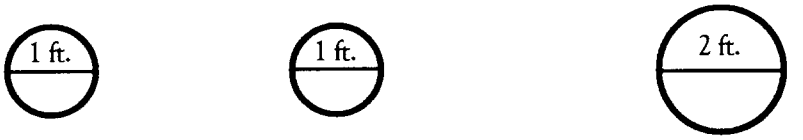
In April 1994, the FHWA decided against action on the conversion of highway signs until after 1996. Somehow this has made headlines as a setback for metric, but for the construction industry, FHWA's notice is welcome: it separates the metrication of signage, essentially a cultural issue, from the metrication of construction, which directly affects the quality, efficiency, and global competitiveness of the U.S. construction industry. Without the distraction of the signage debate, the industry can concentrate on meeting FHWA's October 1996 deadline for new highway construction to be in metric.

Signage aside, the federal commitment to metric is stronger than ever. With the Navy's recent announcement that it will build its new projects in metric after October 1996, the federal agencies have all "gone metric' in their construction programs.

(Source: "Metric in Construction," September-October 1994 by the Construction Metrication Council of the National Institute of Building Sciences, Washington, D.C.)

A Test on Fundamentals

Which culvert(s) carry the most volume of water? Two 12-inch pipes or one 24-inch pipe? (Assume water velocity is identical.)



Answer: The amount of water carried by culverts is proportional to the cross section area of the pipe.

$$\text{Area (1 pipe)} = \frac{3.14 \times 1 \text{ ft.} \times 1 \text{ ft.}}{4} = 0.785 \text{ sq. ft.} \qquad \text{Area} = \frac{3.14 \times 2 \text{ ft.} \times 2 \text{ ft.}}{4} = 3.145 \text{ sq. ft.}$$

For 2 pipes: Area = $2 \times 0.785 = 1.57$ sq. ft.

One 24-inch pipe has twice the capacity as two 12-inch pipes!

Traffic Sign Maintenance Standards

by Edwin Lagergren, P.E.

Do you periodically check your traffic signs? Do you replace the traffic signs that are not up to par? What is par? The traffic safety community, including the Federal Highway Administration (FHWA), has been asking this question for ten years and has now developed guidelines for the minimum maintained retroreflectivity of traffic signs. Retroreflectivity is the ability of a surface (the sign sheeting material) to reflect light back in the same direction from which it came as opposed to mirror reflection or diffuse reflection.

Prior to the new guidelines there was no standard for when a sign should be replaced. National guidelines regarding the nighttime visibility of signs are limited to the stipulation in the *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD) that all warning and regulatory signs be illuminated or reflectorized to show the same color and shape by day or night. The FHWA has now developed a set of minimum maintained retroreflectivity guidelines for the various types and colors of traffic signs. The guidelines were developed by plugging the research findings into a computer model which quantified the interaction between the sign properties, driver characteristics, the vehicle headlamp system, traffic operations, and roadway geometry.

The FHWA is considering a number of implementation strategies and is now assessing the potential impacts of the proposed standards on state and local agencies. WSDOT and city of Grand Coulee are participating in this study. Among the considerations are the impacts of the guidelines on cost and safety, as well as the potential impacts on the traveling public. The next step will be to add the guidelines to the MUTCD. The FHWA will probably use the Federal Register rulemaking process to obtain public comment on the new standards. The standards will probably be in the next edition of the MUTCD, tentatively scheduled for publication in 1996.

So, what does this mean? Will signs have to be replaced more often? Will my agency be sued more often? Will driving at night be safer than is now?

I believe the new standards will have little effect on an agency that is currently monitoring and replacing signs as necessary. In 1986, I performed a study for WSDOT and ultimately the FHWA titled Traffic Sign Retroreflectivity Measurement Using Human Observers. In the study I trained 17 people to rate stop and warning sign using a rating system I had designed. My warning signs rating system and the

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Transportation in America Profiled

Transportation outlays represent 16.1 percent of the gross national product, while transportation and related industries employ 10 percent of the civilian labor force, according to the 12th edition of the annual Eno Foundation report. The report also contains a wide range of transportation statistics, including both passenger and freight movements.

Copies may be obtained from the Eno Transportation Foundation Inc., 44211 Slatestone Court, Lansdowne, Virginia 22075.

(Source: AASHTO Journal, September 23, 1994.)

Mike Kyte Named NCATT Director

The Institute of Transportation Engineers Idaho Chapter president, Dr. Michael Kyte, was recently selected to head up the National Center of Advanced Transportation Technology (NCATT) at the University of Idaho.

NCATT was established in December 1991 as part of the Intermodal Surface Transportation Efficiency Act (ISTEA). ISTEA provided $8 million for the construction of a building to house NCATT. Construction is currently underway.

In addition to his duties as NCATT Director, Michael will continue to teach traffic engineering courses as Associate Professor of Civil Engineering at the University.

(Reprinted from Institute of Transportation Engineers, Idaho Chapter Newsletter, September 1994.)

Update — The Washington State Highway Safety Management System

by Gary Farnsworth

On August 30, 1994, the federal agencies, through Secretary of Transportation Sid Morrision, informed us that the Washington State's Safety Management System (SMS) was found to be acceptable subject to specific comments. This is great news, considering we were one of only two states (the other being Pennsylvania — the SMS "pilot" state) to submit our SMS as an "existing" system. It is also great news to have the endorsement of our federal representatives, the FHWA and the National Highway Traffic Safety Administration (NHTSA).

We are currently working with the SMS Standing Committee, made up of representatives from all shapes and forms of traffic safety constituents, to prepare the first annual certification of SMS to the federal agencies, due on January 1, 1995. How is this different from our submittal as an "existing" system? It is basically the same, except that we will address each of the specific comments given to us by FHWA and NHTSA on August 30.

How does the acceptance and certification of SMS affect local jurisdictions? There are no reporting requirements of local agencies, however, they can participate by defining what they presently do and build upon it. It means they will only find benefits by improved traffic safety, if they choose to participate. They will benefit by improved advocacy for their specialized needs and resources, by better organization and information to share with their decision-makers, by better opportunities for funding and applying traffic safety investments.

Does the acceptance and certification of statewide SMS mean new paperwork requirements for local jurisdictions? The answer is simply No. If a local jurisdiction wants to participate in SMS, they first define their traffic safety programs and activities. Next, they compare it to the key processes identified by SMS. This can be as simple as a jurisdiction needs it to be — but it creates a common language for sharing information and resources.

The SMS Standing Committee is also currently trying to provide clear identification and coordination with traffic safety advocacy groups and private organizations. We also want to ensure, through existing programs outreach like T^2, that all cities and counties fully understand the benefits provided by SMS.

Address your questions to Gary Farnsworth, WSDOT Traffic Office (360) 705-7289; Steve Lind, WTSC, (360) 753-4018, or Dan Sunde at (360) 705-7383.

In the News

Value Engineering Application Proposed

The Federal Highway Administration issued a Notice of Proposed Rulemaking (NPRM) requiring the application of "value engineering" (VE) to selected federal aid highway projects that are funded under the FHWA's grant-in-aid process.

The proposed rule resulted from a study mandated by ISTEA of 1991. The study concluded that "the FHWA recognized value engineering as an effective and proven technique for reducing cost, increasing productivity, and improving quality" when applied to the development of highway projects.

Although many states already administer value engineering programs, the proposed rule, if administered, would require states to establish and administer value engineering programs for selected federal aid highway projects. The NPRM outlines the minimum VE program requirements and provides guidance on creating and administering such a program.

The notice was published in the November 16 Federal Register, and the FHWA solicited comments on the proposed rule.

(Source: AASHTO Journal, November 23, 1994.)

Super Car a Decade Away

A research program between the U.S. auto makers and national laboratories has made substantial progress in its first year, but an energy efficient super car is still a decade away.

The Partnership for a New Generation of Vehicles was established September 29, 1993, to develop a prototype vehicle which is three times more efficient than today's car, as well as economically viable. To do so the research groups intend to reduce vehicle weight by 40 percent, increase engine efficiency by 40 to 55 percent, implement regenerative braking and increase energy storage by 50 percent.

A number of technological advances have been achieved in the first year, including the establishment of three fuel cell programs, which would produce electricity from hydrogen and oxygen and produce no pollution. Officials of the program say that the research group has completed its long-range technical plan and identified ways to achieve its goals.

(Source: AASHTo Journal, October 21, 1994.)

National Work Zone Conference Held

Improving highway work zone safety through training, public awareness and new technology was the theme of a National Work Zone Safety Conference held in Washington, December 5-7. Two hundred people attended, including safety experts for 23 states.

The conference was sponsored by the FHWA and co-sponsored by AASHTO and the American Traffic Safety Services Association (ATSSA). It was organized by the American Road and Transportation Builders Association (ARTBA).

In 1993, a total of 762 people were killed in accidents in highway work zones, which represents an increase over 1992 and a reversal of a three year decline in work zone deaths.

Dr. Nicholas Garber of University of Virginia noted that it was not until the early 1960s, that the maintenance of traffic was considered important enough to develop a separate section of the MUTCD dealing with work zones. In the past 40 years, traffic control has gone from instilling a simple sign indicating "men working" to very complex detailed traffic control plans on road construction projects.

Changes that became part of the September 3, 1993, Revision of Part VI of the MUTCD, entitled Standards and Guides for Traffic Controls for Streets and Highway Construction, Maintenance, Utility, and Incident Management Operations are required to be adopted by December 1995. Among those new requirements are providing a buffer zone to provide space for additional protection for construction workers, after the advance warning area and the transition zone. A new section was added to Part VI that addresses the area of Pedestrian and Worker safety. The number of illustrations was increased to 44 typical applications for different work zones.

(Source: AASHTO Journal, December 9, 1994.)

In the News (Continued)

Scholarships Awarded by Coral Sales

Continuing its Coral Sales Company — Douglas P. Daniels Scholarships, Coral Sales awarded 38 scholarships for the 1993-1994 school year. Starting in the fall of 1986, Kathleen Johnson is pleased to report that approximately 190 students of civil engineering or construction management have benefited from the $500 scholarships. This in turn has promoted a high interest in transportation education in the northwest.

Recipients of the scholarships for the 1993-1994 school year are listed for the various northwestern universities.

Boise State University
Neil Nelson and Samantha Totten, Construction Management

Gonzaga University
S. John Mrzygod III and Annette VanDyke, Civil Engineering

Montana State University
Lisa Balderidge an Michael Sanderson, Civil Engineering
George Durkin and Phyllis Stonehocker, Construction Engineering Technology

Oregon Institute of Technology
Jennifer Long and Richard Schaff, Civil Engineering Technology

Oregon State University
Kevin Larson and Dawn Lively, Civil Engineering
Walter Hislop and Peggy Keppler, Post-Graduate Civil Engineering
Darin Charboneau and Debra Ann Lukens, Construction Engineering Management

Portland State University
Alexander Bejarno and Loretta Kieffer, Civil Engineering

Saint Martin's College
Susan Agrusa and Brian Matthews, Civil Engineering

University of Alaska, Anchorage
Jeannie Carpenter and Michael Davies, Civil Engineering

University of Alaska, Fairbanks
Alex Prosak, Civil Engineering
Pauline Logan, Post-Graduate Civil Engineering

University British Columbia
Vered Cohen and Carol Newton, Civil Engineering

University of Idaho
Scott Jones and Nancy Klootwyk, Civil Engineering

University of Portland
Arnel Mandilag and Kim Parducci, Civil Engineering

University of Washington
Robb Dibble and Christine Engan, Civil Engineering
Irene Argue and Marc Seferian, Post-Graduate Civil Engineering

Walla Walla College
Wilberto Otero-Huertas and Kim Petersen, Civil Engineering

Washington State University
Sherell Ehlers and Darin Moore, Civil Engineering

All awards were for $500. In addition: $1,000 was donated to the Oregon State University Foundation Program for the Department of Construction Engineering. $100 was donated to the Washington Institute of Transportation Engineers Scholarship Fund.

Hotline Started by TransNow

Up-to-date information about transportation facts and issues is now only a phone call, a fax, or an e-mail message away. Staff at the new Transportation Research Information Hotline (TRIH) at the University of Washington can help callers find answers to a wide variety of questions about local and national transportation issues.

The hotline is ready to help callers with such questions as: What are the latest proposals for a rail system to link Puget Sound cities? What rights do people with disabilities have in using public transportation? Where can I find information about High Occupancy Vehicle (HOV) lanes nationwide? What are the newest federal mileage standards for light trucks? Are there plans to expand ferry service in Puget Sound? What is the latest research on Intelligent Vehicle Highway System? TRIH (pronounced "try") provides information mainly on surface transportation issues, as opposed to in-flight air transpiration. Areas include vehicle traffic and public transit, was well as rail, port, terminal, and intermodal operations.

Telephone hours are 8:00 a.m. to 5:00 p.m. PST Monday through Friday, except for holidays, but fax or e-mail questions may be sent at any time.

The new hotline is a service of Transportation Northwest (TransNow), a research center which is one of ten regional centers of the national University Transportation Centers Program (UTCP). The UTCP goal is to attract the nation's best talent to the study of transportation and to develop new strategies to resolve transportation issues.

Contacts are as follows:

Transportation Research Information Hotline, phone (206) 616-1088, fax (206) 543-5965, or e-mail trihline@u.washington.edu

Mail: TransNow, 135 More Hall, FX-10, Seattle, Washington 9819

Skills Enhancement Opportunities

The purpose of this column is to inform you of the numerous educational opportunities that exist for Washington State and adjacent states' transportation people.

For more information contact Stan Sanders at 1-800-973-4496 or (360) 705-7477, Monday through Friday from 7:00 a.m. to 4:30 p.m. Additional information is available from the bulletin board (EBBS) at (360) 705-6840.

Northwest Technology Center

Call Laurel Gray in the T^2 Center to register or for further information (360) 705-7386.

Watch for the following classes to be offered between January and July:

- ❒ Inspection of Fracture Critical Bridge Members
- ❒ Traffic Conflict Techniques for Safety and Operations
- ❒ Access Management, Location, and Design
- ❒ Estimation of the Impacts of Transportation Alternatives
- ❒ Fundamentals of Rural Appraisal
- ❒ Safety Management System
- ❒ Stream Stability and Scour at Highway Bridges
- ❒ Design and Application of Travel Demand Management Techniques
- ❒ Geosynthetic Engineering Workshop
- ❒ AASHTO/AWS Bridge Welding Code
- ❒ **Contract Plans, Specifications, and Estimate (PS&E) Preparation and Contract Special Provision Writing.** March 1-2, March 15-16, March 29-30, Seattle; January 26-27, Spokane; April 5-6, Seattle; April 12-13, Seattle; February 1-2, Vancouver; February 9-10, Everett/Mount Vernon; February 15-16, Tacoma; February 21-22, Olympia; March 9-10, Yakima; March 21-22, Wenatchee. No fee, 16 hours.

Staff Development WSDOT

- ❒ **Entry Management Development (AAA).** March 7-9, Seattle; April 4-6, Olympia. No fee, 21 hours
- ❒ **Bicycle Facility Planning and Design (ABK).** March 16-17, Olympia; March 27-28, Spokane; April 13-14, Seattle. No fee, 16 hours.
- ❒ **Construction Contract Claims, Recognition and Analysis (ANY).** Late January/February, Spokane. $150, 14 hours.
- ❒ Worksite Traffic Supervisor Seminar (A42). January 24-26, Spokane; January 31-February 2, Olympia; February 1-3, Vancouver; February 6-8, Seattle. 20 hours.
- ❒ **Electrical-Illumination and Signals (API).** March 22-23, Seattle. No fee, 12 hours.
- ❒ **Miscellaneous Documentation (ACY).** April 25, May 4, Seattle; February 7, Vancouver; March 14, Spokane; March 21, Olympia. No fee, 7 hours.
- ❒ **Bridge Structures Inspection (ACM).** February 14-16, May 23-25, Seattle; March 14-16, Wenatchee. No fee, 24 hours.
- ❒ **Drainage Inspection (ACF).** February 7, March 16, April 13, Seattle; February 9, March 16, Spokane; February 16, Vancouver; March 7, Wenatchee; March 23, Olympia. No fee, 6 hours.
- ❒ **Traffic Engineering Fundamentals for Transportation Engineers (AFP).** March 13-15, Olympia; April 10-12, Seattle; April 24-26, Spokane. No fee, 32 hours.
- ❒ **PCC Field Testing Procedures (ABT).** February 8, Vancouver; March 2, April, 25, Olympia; April 11, Seattle. No fee, 7 hours.
- ❒ **Basic Metric (BHT).** February 10, a.m. and p.m., Spokane. No fee, 3 hours.

University of Washington, PEPL Program *(206) 543-5539*

- ❒ **Seismic Design of Structures II: Design and Detailing of Steel and Reinforced Concrete Systems.** January 17-February 14, (9 sessions) 4:30-6:30 p.m., Tuesday and Thursday. For design engineers, construction engineers and contractors, and structural engineers. Course focusing on issues and practical structural design. $385 (before January 4, 1995), $420 thereafter.
- ❒ **Effective Maintenance Management.** April 5-7, $795. For maintenance supervisors and plant managers.

Saint Martin's College *(360) 438-4320*

- ❒ **P.E.-EIT Review.** Classes beginning mid-January. Call for times and fees.
- ❒ **Masters in Engineering Management.** Beginning January 18, evening classes 5:30 p.m. to 8:20 p.m., Mondays, Engineering

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Law; Tuesdays, Quality Control; Wednesdays, Systems Engineering Management Planning (206) 438-4322 for more information and fees.

Washington State University, Conferences and Institutes
1-800-942-4978, Fax (509) 335-0945

- ❒ **How to Coach and Council for Improved Employee Performance.** March 13,-14, Holiday Inn, Sea-Tac. $695, 2 days.

ASCE
1-800-548-2723

- ❒ **Construction Project Administration On-Site Supervision and Claims Avoidance.** March 19-20, Portland, OR. $645 members, $794 nonmembers.
- ❒ **Bridge Scour Analysis.** April 10-11, Seattle, WA. $645 member, $745 nonmember.

Asphalt Institute
(206) 786-5119

- ❒ **Construction of Quality Hot-Mix Asphalt Pavements.** February 9, Wilsonville, OR; February 16, Tacoma, WA; February 23, Yakima, WA. $80, 1 day.

Law Seminars International
(206) 621-1938

- ❒ **The Endangered Species Act.** Janaury 19-20, Washington State Convention and Trade Center, Seattle. $395, $345 for two or more from one agency, $315 government rate, $197.50 student and new associate one day only, half price.
- ❒ **Contaminated Sediments.** March 23-24, Seattle. $395, $345 for two or more from one agency, $315 government rate.
- ❒ **Sensitive Areas.** February 16-17, Seattle. $395, $345 for two or more from one agency, $315 government rate.

Department of Labor and Industries Consultation and Education Program
(360) 956-5451

The following is a listing of free L&I classes scheduled through January. Call L&I for a complete list.

- ❒ **Accident Investigation.** Identify the causes of workplace accidents and associated costs. January 26, Tacoma. A workshop can be conducted at your place of business. 3 hours.
- ❒ **Controlling Your Claims Costs.** Helps you develop an effective claims management strategy for your business. January 25, Everett; January 26, Tumwater. 4 hours.
- ❒ **Return-to-Work Programs Make Sense.** Design and build your own return-to-work program. January 25, Tumwater. 3 hours.
- ❒ **Supervisor's Guide to Loss Control.** Designed to teach modern supervisor how accidents and their aftermath affect a company's bottom line. Can be presented at your place of business: January 18, Bellingham; 3½ hours. Phone-in registration for the following L&I classes. Call the phone number listed for each city.

Department of Community Trade and Economic Development
(360) 586-0662 or (360) 753-3158

- ❒ **Public Works Trust Fund Construction Application Workshop.** February 17, Kelso; February 21, Spokane; February 22, Pasco; February 23, Wenatchee; February 27, Mount Vernon. Contact Cecilia Asher.
- ❒ **Grant/Loan Application Workshop.** March 1, Tacoma; March 2, Spokane; March 7, Pasco; March 9, Longview. Contact Tina Cohen (360) 586-0662.

Conferences and Meetings

- ❒ **40th Annual Convention of the National Asphalt Pavement Association (NAPA).** Contact LaDonna Burton, Meetings Registrar, (301) 731-4748, Fax (301) 731-4621. February 18-23, Hilton Waikoloa, HI.
- ❒ **AASHTO-FHWA, Make the Move to Metric, National Metric Conference.** (602) 407-3220, February 21-24, Phoenix, AZ.
- ❒ **International Erosion Control Association, 26th Annual Conference and Trade Exposition.** 1-800-455-4322, Fax (303) 879-8563, February 28-March 3, Westin Peachtree Plaza Hotel, Atlanta, GA.
- ❒ **APWA: Public Works and the Human Environment.** (206) 543-5539, Fax (206) 543-2352, April 19-21, Seattle. Contact Engineering Professional Programs at the University of Washington.
- ❒ **Interagency Committee of State Employed Women, Strength Through Diversity (ICSEW) Conference.** (206) 407-7529, June 12-14, Central Washington University Conference Center.
- ❒ **6th International Conference on Low-Volume Roads.** June 25-29, Minneapolis, MN.
- ❒ **Road Builder's Clinic.** March 7-9, Red Lion Inn, Spokane. Contact WSU, (509) 335-3530.
- ❒ **5th National Transportation Planning Methods Applications Conference.** April 17-21, Seattle. Contact Jerry Schultz (206) 440-4727.

Continued from page 6

FHWA rating system replace signs at about the same level of retroreflectivity for the bold symbol signs that I used (intersection, turn, curve, etc.). The FHWA stop sign replacement level is much lower than the system I devised. When a traffic sign's retroreflectivity level reaches the replacement level the sign will obviously be ready for replacement. The trained observers in my study were correct on over 80 percent of their ratings for signs either above or below this level.

The human eye cannot distinguish between absolute levels of brightness. The retroreflectometer, an instrument that measures retroreflectivity similar to the light meter on a camera, is the only way to be absolutely sure your signs are above the minimum levels of retroreflectivity. However, I would predict that a sign technician, familiar with signs in their territory could make the correct decision to replace or not replace a sign much higher than 80 percent of the time. Again, my study was for stop and warning signs, but I believe that a trained sign technician could also rate the other colors. A sign inventory and an installation date sticker on the sign would increase accuracy even further. Some questionable signs will be replaced before the end of their service life, but they will be minimal.

If your agency has been neglecting your sign maintenance, you may have to replace a number of signs to comply with the new minimum retroreflectivity standards. The time frame for replacement will depend on the FHWA implementation plan. The new minimum standards will require more effort and resources. The standards will increase liability, but agencies already have a duty to maintain the roadway in a safe manner. The new standard will call attention to agencies to properly maintain traffic signs, which will contribute to safer roadways.

If you have any questions concerning this article or have other traffic concerns, please call me at (360) 705-7986.

Shareware Software Available

Software (360) 705-7477

Hyper Calc, a utility for converting between metric and English units. It runs on PC microcomputers operating with Microsoft Windows Shareware. Send a formatted high density diskette to Stan Sanders, NWT^2 Center, TransAid, P.O. Box 47390, Olympia, WA 98504-7390.

Mark Your Calendar!

46th Annual

Road Builders' Clinic

March 7-9, 1995

Red Lion Inn, Spokane, Washington

Session Features

New Standards and Procedures in Transportation Manuals

Transportation Issues: A Political Point of View

IVHS Operational Tests: Recent Results

The Latest on Pavements and Materials

Quality Initiatives in Transportation

ISTEA Management Systems

❦

Conference Attendance Fee: $185
Vendor Fee: $275
(includes conference attendance)

Presented jointly by Washington State University and University of Idaho

Program and registration materials to follow from Conference and Institutes, Washington State University, Pullman, Washington 99164-5222, Telephone (509) 335-3530 or 1-800-942-4978.

The Importance of Learning and Knowledge

by John Milton, P.E.

"Knowledge is Power" ... Sir Frances Bacon, 1597

This simple saying by Sir Frances Bacon intrigues me. What he said in 1597 was as important then, as it is today. This statement points to the importance of learning and knowledge, and its' relevance to our everyday professional and personal lives.

Often, as college graduates, we are ignorant enough to believe that our education has prepared us for the trials and tribulations of the "real world." It is then we find, that our first days on the job are, in fact, a new beginning for our education. Similarly, the experienced journeyman may find him or herself facing a rapidly evolving and changing workplace as technological advances race at an ever quickening pace.

What is apparent in both of these examples, is that our education and experience, however vast, only provide a basis for future learning. The most successful individual is one who understands that learning is a never ending process. And, critical to this success is the ability to access and disseminate information or knowledge. John Naisbitt, author of the book Megatrends, argues that, "once capital was power. But now, as an information society, those who control and understand the information are truly in power." This, however, does not suggest that having access to information is the simple key to success. It is of equal importance to understand the difference between what is useful information, and that which is not. We as an organization must be able to determine what is "old hat" and what is cutting edge technology. Failure to decipher the important from the unimportant will lead to a loss in productivity and morale.

As has been suggested, the employees who have the knowledge, and are working with critical information are the leaders. These are the people who provide the imagination and insight to any organization. Both these qualities are critical to the growth and success of any company. These leaders are responsible for sharing this information with others by providing training and guidance in using tools, following procedures, and demonstrating personnel management. Through this, employees will learn new ways of approaching problems, issues, unfamiliar terms and techniques, and what is proper conduct on the job.

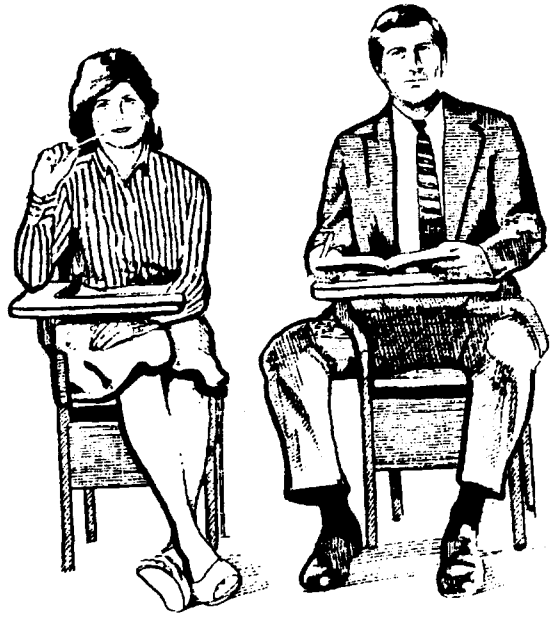
(John Milton is a Systems Plans Engineer with WSDOT.)

"The most successful individual is one who understands that learning is a never ending process"

In addition, training should be given or taken at a time when it is most needed, and should be applied immediately. Otherwise, within a short time employees will forget what they have learned. To achieve the greatest effect, learning should be fun, interesting and meaningful. Learning should encourage growth and, therefore, must challenge an individual into appropriate risk taking.

Finally, managers and supervisors should be the principle instructors of their employees They should fully understand the information employees need. This ensures that both the supervisor and employee has a common understanding. It also sends a clear message to the employee as to what is important. When managers and supervisors don't have the information, only then should they seek training assistance from other experts or consultants in the respective field.

In summary, we must never forget the importance of learning. As Vernon Law, pitcher for the Pittsburgh Pirates said, "When you're through learning, you're through."



Traffic Help Still Available

Many local agencies have used the traffic services of Ed Lagergren when he was with Local Programs (now TransAid). Ed is still available to consult with local agencies regarding their traffic problems but he is now at a different office.

Contact Ed at (360) 705-7986 or fax (360) 705-6826. His address is Ed Lagergren, P.E., Traffic Service Engineer, WSDOT Traffic Office, 505 East Union, P.O Box 47344, Olympia, Washington 98504-7344.

IVHS America Now ITS America

The Intelligent Vehicle Highway Society of America has formally changed its title to the Intelligent Transportation Society of America (ITS America).

Incorporated in 1990 to foster the use of advanced communication, electronic and computer technologies in surface transportation systems, ITS America now has some 475 member organizations from the public and private sectors, including a majority of the state DOTs and many foreign companies.

(Source: AASHTO Journal, Volume 44, No. 36, September 30, 1994.)

Pickups, Gas Cans, and Static Electricity

Two local fire departments experienced four incidents involving the filling of small gasoline cans.

All four incidents were nearly identical. They involve a pickup with an open bed and a plastic bedliner, a five-gallon metal gasoline can and a dispenser nozzle.

The interesting part is that three of the incidents involved the same vehicle and the same pump. There were different drivers at each incident. The fourth incident occurred at a service station 20 miles from the first station.

The incidents occurred as follows:

- ✓ Pickup is driven several miles to service station.
- ✓ Pickup has open bed with plastic liner.
- ✓ Gas can is metal.
- ✓ Can is left in the pickup bed for filling.
- ✓ Gasoline dispenser nozzle is inserted into can and a flash occurs; or can is filled, nozzle is removed and flash occurs.

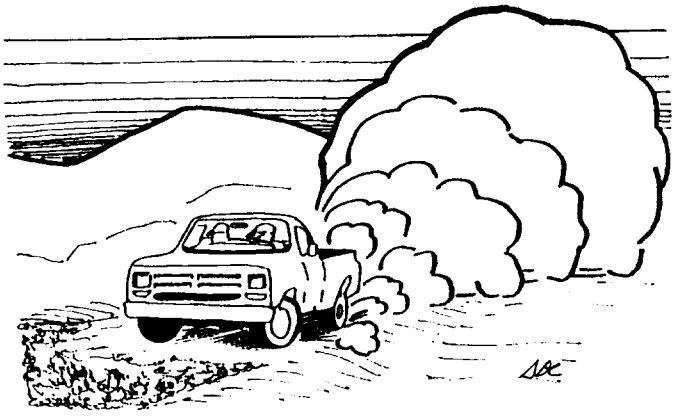
Two of the ignitions were flash fires burning gasoline vapors. The other two incidents stared fires which caused damage and required fire department response. One driver received minor burns on his hands and face.

The proposed theory is that:

- ✓ Air friction causes a static charge to build on the pickup.
- ✓ The can has high static potential and when the nozzle makes contact with the can, it creates a spark which ignited the gasoline vapors.

Please take note of this potential problem and eliminate any build up static electricity on your gas can before filling them.

(Adapted from Wagonwheel Express, July 1994, Idaho T^2 Center.)



Free Publications

For Washington recipients only: Contact Laurel Gray at (360) 705-7386 if you want publications.

Rating Unsurfaced Roads — A Field Manual for Measuring Maintenance Problems, CRREL

(Special Report 87-15) This brief report provides the tools necessary to rate and evaluate the unpaved roads of an agency. Prepared by the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL). September 1988.

Unsurfaced Road Maintenance Management, CRREL

(Special Report 92-26) After ratings are made of unsurfaced roads, the next steps are covered in this special report by CRREL. A systematic and organized process is presented on managing the maintenance of these unsurfaced roads. December 1992.

Highway Utility Guide (FHWA-SA-93-049)

The guide "provides the state-of-the-knowledge on the better practices being employed. It addresses the full array of issues which can arise from highway and utility facilities sharing a common right of way." June 1993.

Pothole Primer, Special Report No. 81-21, U.S. Army Corps of Engineers

This 28-page guide is for public administrators better understanding and managing of pothole problems. The basics of the causes and solutions to potholes are clearly stated and are valid today as in 1981.

Basic Metric System Participants Workbook, WSDOT

This booklet was used in WSDOT's training course held in 1994. It provides in 51 pages an overview of the metric system. Sample problems with answers are given.

Moving With Metric — Metricube (FHWA-SA-94-018)

This foldable cube shows volume, temperature, mass weight, length, and other interesting facts on metric conversion.

Scrap Tire Utilization Technologies, NAPA

Information series 116 provides a succinct overview of various uses for scrap tires, barriers to implementation, and sample policy statements on solid waste management of waste tires used in Oregon.

State-of-the-Art Survey of Flexible Pavement Crack Sealing Procedures in the United States, CRREL Report 92-18, U.S. Army Corps of Engineers

This brief 20-page guide summarizes current methods and materials used by contractors and state departments of transportation for crack sealing on flexible pavements. Advantages and disadvantages of various repair methods are stated.

Roadside Improvements for Local Roads and Streets, FHWA

This brief, well illustrated, 31-page guide shows low cost methods of improving and enhancing roadside safety. It is not a design manual but provides an overview of improving safety in the road side.

Maintenance of Aggregate and Earth Roads

A reprint of a NW T^2 Center "best seller."

Asphalt Seal Coats

A reprint of a NW T^2 Center "best seller."

A newsletter of the Local Technical Assistance Program (LTAP)

Issue Number 45, Winter 94/95

Bulletin

SHRP Devices to be Displayed

Plans are being made to display various Strategic Highway Research Program (SHRP) devices at the Road Builders' Clinic. In addition, the T^2 Center, WSDOT Maintenance, and FHWA is scheduling a series of stops throughout the state where materials will be displayed. Materials include intrusion devices, rumble strips, directional indicator barricades, opposing traffic lane dividers, impact recovery systems, all terrain sign stands, and various types of stop/slow paddles.

Formal announcements of these opportunities will be made in the near future. Meanwhile our tentative schedule for displaying SHRP products is as follows:

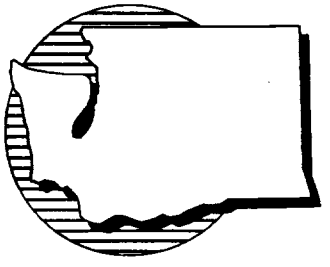
March 7-9	Road Builders' Clinic, Spokane
March 13 a.m.	Pullman area
March 14 a.m.	Tri-Cities area
March 15 a.m.	Ephrata area
March 16 a.m.	Omak area
March 17 a.m.	Wenatchee area
March 20 a.m.	Yakima area
March 21 a.m.	Kent area
March 22 a.m.	Mount Vernon area
March 23 a.m.	Lewis County area
March 24 a.m.	Clark County area

Plan to attend one of these morning presentations.

The Technology Transfer Center (T^2) Program is a nationwide effort financed jointly by the Federal Highway Administration (FHWA) and individual state departments of transportation. Its purpose is to translate into understandable terms the latest state-of-the-art technologies in the areas of roads, bridges, and public transportation to local highway and transportation personnel.

Washington State Department of Transportation
TransAid Service Center

U. S. Department of Transportation
Federal Highway Administration



Northwest Technology Transfer Center
WSDOT-TransAid Service Center
P.O. Box 47390
Olympia, WA 98504-7390

Address Correction Requested